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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
|-----------------|-------------|----------------------|---------------------|

09/253,611 02/19/99 FARRAR

P 303.572US1

EXAMINER

MMC2/0328

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|           |              |
|-----------|--------------|
| COMBEE, R |              |
| ART UNIT  | PAPER NUMBER |

2812  
DATE MAILED:

10  
03/28/01

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
**09/253,611**

Applicant(s)

**Farrar**

Examiner

**Ron Pompey**

Group Art Unit  
**2812**



☒ Responsive to communication(s) filed on Feb 26, 2001

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle* 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claim

☒ Claim(s) 1-23 and 64-67 is/are pending in the applicat

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-23 and 64-67 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-24 and 64-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook et al. (US 5,457,345) in view of Thomas (US 4,661,375) and Strube et al. (US 4,650,548).

Cook disclose the steps of:

For claims 1-24 and 64-67:

forming a metal contact pad on a substrate (12, fig. 1);  
forming an insulating layer on the metal contact pad (14, fig. 1);  
removing a portion of the insulating layer to expose a portion of the metal contact pad,  
thereby forming an exposed portion of the metal contact pad;  
depositing solder (46, fig. 4), wherein at least one material is selected from the group consisting of lead, tin and bismuth, on the exposed portion of the metal contact pad (44, fig. 4) using selective deposition, further comprises depositing solder on the exposed portion of the metal contact pad using a deposition process selected from the

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group consisting of immersion contact, chemical vapor deposition and electrolytic deposition, thereby forming a solder contact (col. 5, Ins. 1-10 and 37-49); and

annealing the solder contact to form a solder ball contact (col. 1, Ins. 36-44), having a diameter in a range of about 2.5 microns to no greater than 100 microns(col. 2, Ins. 1-5).

3. Cook fails to disclose some or all the limitations of claims 1, 8-12 and 13-23.

However,

a. Thomas discloses the steps of:

For claims 1 and 9-10:

deposition of the solder by immersion.

b. Strube discloses the steps of:

For claims 13-23:

electrolytically depositing solder on the exposed portion of the metal contact pad.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the steps disclosed by Strube in Cook, because said immersion and electrolytically deposition methods are conventional ways to deposit a solder.

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c. For claims 8-12, 15, 20 and 23:

further comprises forming an exposed portion of the metal contact pad having a diameter specific diameter;

wherein the insulating layer has a thickness of approximately 1.5 microns; and


wherein the layer of tin has a thickness of approximately 1.42 microns, further

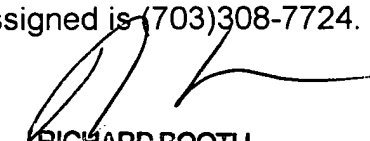
wherein the layer of lead and the layer of tin form a solder contact having a thickness of approximately 2.33 microns.

The examiner takes official notice that it is well known in the art and therefore, *prima facie* obvious to incorporate the above limitations in Cook or Thomas and Strube, because they are conventional thicknesses diameters and deposition process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ron Pompey whose telephone number is (703) 305-3016. The examiner can normally be reached on Monday - Friday from 7:30 am to 5:00 pm. The examiner can also be reached on alternate Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling, can be reached on (703)308-3325. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7724.

  
Ron Pompey  
March 23, 2001

  
RICHARD BOOTH  
MINER